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ABSTRACT

The Maternal Teaching Style Instrument (MTSI) was developed by C. R. Barbrack in 1970, to record mother-child interactions. The mother's teaching style was observed as she helped her child complete a series of tasks. Both nonverbal (gesture, physical contact, direction, positive and negative feedback) and verbal behaviors (cue label, direction, question, information, positive and negative feedback) were observed. H. Sandler, L. Stewart, and Barbrack developed a revised form in 1971, as well as a new coding form. Sandler also developed an alternative MTSI in 1973. Form materials for the 1971 and 1973 instruments, directions for administration and coding, the scoring grid, and coding category descriptions are appended. Research studies which have used various forms of the MTSI are described; this includes the evaluation of home-based intervention programs in which the mother's teaching effectiveness is measured. In the present study, the 1971 revision and 1973 alternative forms were administered to 17 mother-child pairs. Data were analyzed according to race, sex of the child, and mother's age. The findings indicated that the MTSI differentiated teaching style behaviors, and that mother's age was the only demographic variable to correlate significantly with teaching behavior. Comparative analysis of both forms demonstrated the validity of the 1971 and the 1973 instruments. (Author/GDC)

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DEVELOPMENT OF AN ALTERNATIVE FORM OF THE MATERNAL TEACHING STYLE INSTRUMENT

by

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A Milestone Report on Contract NE-C-00-3-0261

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Introduction

One of the questions facing psychology today concerns the malleable factors which facilitate cognitive growth. In spite of much research, we have not as yet discovered all the possible variables which may be manipulated in order to alter the academic achievement of low-income youngsters in a significant fashion. However, one variable which has recently received a lot of research attention is the mother-child interaction. For example, Miller (1970) states that during the child's early formative years, "the instrumental environment," composed primarily of the family with the effective instrumental agent as the mother, appears to be the most important dimension in designing an intervention strategy. In response to the increased concern toward the mother-child relationship, Barbrack (1970) developed the Maternal Teaching Style Instrument in order to more objectively investigate such relationships. In 1973, Sandler developed an alternative form of this instrument. The present study proposes to use low-income, mother-child pairs to establish the validity of the alternative form. Also, certain demographic variables, such as sex of child, race, and age of mother, will be investigated.

Extensive research efforts have been devoted to investigating the relationship between specific maternal characteristics and the cognitive abilities of young children. Moss and Kagan

(1958) found only moderate correlations between maternal warmth and the child's IQ. However, Radin (1971) found maternal warmth to be significantly positively correlated with children's gains on Stanford Binet IQ scores, academic motivation, and Peabody Picture Vocabulary IQ scores. Also, Wiegerink (1969), in an unpublished doctoral dissertation, found that out of four maternal characteristics (socio-economic status, personality, language, and teaching style), teaching style shared more common variance with IQ than any of the other three.

Closely related, many researchers have found maternal warmth, love, and acceptance to be associated with a child's satisfactory adjustment (Bayley & Schaefer, 1960; Baumrind, 1966; Bronfenbrenner, 1958; Crandall & Preston, 1955; Sears, Maccoby, & Levin, 1957).

In research on socio-economic status and the mother-child interaction, Walters and Crandall (1964) found higher status mothers to be less dictatorial in their attempts to influence their children's behavior. Tulkin and Kagan (1970) discovered that middle-class mothers tended to exhibit more verbal behavior and more positive feedback. Schmidt and Hore (1970), in a study on socio-economic status and non-verbal interactions, found more physical contact between lower-class mothers and their children, yet there was more glancing behavior in the middle-class group. The authors associated this glancing

behavior with the development of the more complex level of verbal interaction. Bee, Van Egeren, Streissguth, Nyman, and Leckie (1969) found that middle-class mothers allowed their children to work at their own pace, helped structure tasks for their children, and gave appropriate positive feedback. In the same study, they also found that lower-class mothers were intrusive to the point of doing things for their children, were more negative and restrictive, and used more controlling and disapproving statements. Walters, Connor, and Zunich (1964), using methods of direct observation, found lower-class mothers exhibited less contacting, directing, structurizing, and teaching responses.

Using a combination of interview and observational procedures, Hess (undated manuscript) investigated the relationship between maternal characteristics and children's reading readiness scores. This study revealed a relationship between reading readiness and mother's tendency to be warm and supportive. In a later study, Hess and Shipman (1965) employed a technique of teaching three simple tasks to mothers and then asking them to teach the tasks to their children. One of these tasks was to sort or group a number of plastic toys by color and by function, and another task was to sort eight blocks by two characteristics simultaneously. The authors found that lower-class mothers were less verbal and less able to operate on a conceptual level than a group of middle-class

mothers. In 1968, Hess, Shipman, Brophy, and Baer, using Negro mother-child pairs, found that mothers who taught a block-sorting task effectively tended to use sufficient information, specific and clear directions, praise, and encouraged and communicated their expectations of success. The research by Hess was highly influential in the development of the Maternal Teaching Style Instrument (MTSI).

Other research, such as the study by Freeberg and Paine (1967), has shown a relationship between a child's cognitive development and the parents' willingness to spend time with and guide the child. Also, Romaine (1970) found a positive relationship between children's knowledge of block-sorting principles and the parents' teaching style characterized by warmth and task-orientation. Berlin (1972), in related research, found mothers who played educational games with their children as a form of intervention tended to have children that learned more concepts. Other intervention programs focusing on the mother-child interaction, such as Levenstein and Levenstein's (1971) Mother-Child Home Program, and Gray and Klaus' (1965) Early Training Project, have had similar results.

The empirical research presented produces a picture of the lower-class mother as placing a premium on control of behavior rather than on guiding and encouraging explorations into the environment, using methods of control which are

primitive and physical, and spending little time in active and verbal interaction with her child. However, some of the research cited presents the story of effective intervention programs that aid in making the mother an effective educational agent in her child's environment. It is from these successes that there has arisen a need for better means of evaluating the mother-child interaction. The MTSI was developed to "(1) document changes in maternal behavior, (2) to better understand the role of maternal behavior as it influences children's cognitive growth and development . . ., and (3) to refine approaches to training mothers. . . (Sandler, Stewart & Barbrack, 1971, p. 5)."

The Maternal Teaching Style Instrument

The MTSI was designed by Barbrack (1970) to assess mothers' teaching behavior. Teaching style was selected as the parameter of maternal behavior on the basis of the review of the literature and because maternal teaching behaviors were of primary concern to the Demonstration and Research Center for Early Education (DARCEE) and its training objectives. The instrument was designed to create a situation in which the mother is required to help her child successfully complete a series of similar tasks.

The original MTSI consisted of 10 display cards with 3 geometric forms on each card. Accompanying each card were 3 rubber forms which corresponded to those shown on the card.

The general procedure used with the MTSI was to give the mother a card with certain geometric forms printed in certain positions, and the child a card with some or all forms missing. The missing forms were to be randomly placed next to the child's card. The mother was then instructed to help her child make his card look exactly like hers by getting the child to place the forms in the same arrangement as was depicted on her card. She was told that she might do anything to help the child get the forms into the proper arrangement except showing the child her card. In this manner, the only behavior free to vary was the manner in which the mother taught.

The mothers' responses were then rated in two ways. First, during the actual performance, trained observers rated the mothers' non-verbal responses. These non-verbal responses were broken down into two broad categories: Gesture and Physical Contact with each of these again broken down into: Direction, Positive Feedback and Negative Feedback. As the observers rated the mothers' non-verbal responses, the mothers' verbalizations were recorded on tape. These verbal responses were later rated in terms of: Cue Label, Direction, Positive Feedback, Negative Feedback, Question, and Information.

In 1971, due to inadequacies in the information giving and questioning response categories and the fact that

differences in the mothers' use of non-verbal responses were not being reflected in the MTSI protocol, Sandler, Stewart, and Barbrack revised the MTSI to consist of one practice card and four task cards (see Appendix A). The instructions used are fully described in Sandler et al. (1971). The rating procedure was also modified to record maternal and child responses in sequence. This sequential rating system necessitated a new coding form which is also described in the previous research of Sandler et al. (1971).

In 1973, prompted by the need of a similar instrument for use in future research and evaluation, Sandler developed an alternative form of the MTSI (see Appendix B). The instructions used are the same as those used with the 1971 revision, and the same unitization and scoring grids are used.

The MTSI - Recent Studies

Different versions of the MTSI have been used with some success in several recent DARCEE studies. In 1970, Barbrack used the MTSI in a study designed to investigate the use of home visitors in teaching mothers to become effective educational change agents for their first grade children. Three home visiting strategies were used. In the first group, Mother Involved-Cognitive, the home visitor actively solicited the mother's involvement in the sessions. The content for this group was designed to supplement the first grade curriculum. In the second group, Child Centered-Cognitive, the

home visitors worked only with the child. The content of this group was identical to that of group one. In the third group, Mother Involved-Physical Training, the home visitor again actively solicited the mother's involvement. However, the content of this group was designed to teach the child a variety of gross motor activities. Although all the groups, except one control group, exhibited pretest to posttest gains on the Stanford Binet, the greatest gain was in the Child Centered-Cognitive group. This group also proved to be superior to all other groups on the Metropolitan Achievement Test. Therefore, it was concluded that the Child Centered-Cognitive approach was the most effective home visiting startegy. However, the MTSI data did not uphold this conclusion. The MTSI results showed the mothers in the Mother Involved-Cognitive group to be significantly superior in Information giving, Non-verbal Positive Feedback, and Overall Positive Feedback responses. Had the MTSI not been used, this disparity between the effects of treatment on children and the effects on mothers would have been obscured.

Barbrack and Horton (1970, 1970a) used one version of the MTSI in two other home visiting projects. In these studies only the last 4 MTSI cards from the original 10 display cards were used and only the mother's verbal responses were recorded and rated. One of these studies (1970a) was concerned with investigating three home visiting programs varying in terms of

the professional qualifications of the home visitors. The MTSI data indicated that mothers who were trained by paraprofessional home visitors and who were in turn supervised by paraprofessionals, emitted a greater number of feedback responses in proportion to directions than mothers trained by a professional teacher and mothers trained by proprofessional home visitors who were supervised by a professional teacher. Again, this information would have been lost had the MTSI not been available.

Sandler et al. (1971), in a study involving the development of the presently used MTSI (see Appendix A), analyzed the MTSI data along the dimensions of race (Black/White), sex, and IQ of the child and for certain demographic variables related to the mother (age, education and IQ). The results found the following correlations to be significant: mother's age with Positive Child-Related Reinforcement; mother's WAIS IQ with Appropriate Information, with Physical (negative), with Color, with Shape, and with Position; child's WPPSI IQ with Shape, and with Position; child's sex with Color; and father's presence in the home with Positive Child-Related Reinforcement. Also in the study, the authors, using an intercorrelational matrix for the 16 categories of maternal teaching style proposed discovered the formation of three important clusters. One such cluster was formed along an axis consisting of Appropriate Direction and Appropriate Information and had as

its elements: Gesture, Position, Color, Positive and Negative Task-Related Reinforcement, and Appropriate Question. The existence of this cluster tends to indicate that some mothers give their children a lot of information in the form of Gestures, Questions, Cue Labels, and Task-Related Reinforcement. A second cluster appeared along an axis composed of Inappropriate Direction and Inappropriate Information with the following elements: Inappropriate Question, Negative Child- and Task-Related Reinforcement, and Physical. This suggests that a second group of mothers exists who give their children inappropriate information in the form of Questions and Child-Related Reinforcement. The final cluster, formed about the axis of the Cue Label category of Position, was composed of Appropriate Information, Appropriate Direction, Positive Task-Related Reinforcement, and the Cue Labels of Color and Shape. This cluster proved to be of special interest in that Position, which was the most abstract and relational category, seemed to be the best indicator of the amount of and the varieties of information which the mother gave her child.

Sandler, Dokecki, Stewart, Britton, and Horton (in press) used the 1971 revision of the MTSI in an evaluation of a home-based educational intervention program for preschoolers and their mothers. In this study, a home visitor attempted to teach the treatment group mothers to be more effective educational change agents for their children through such techniques

as behavior modeling and demonstration of materials. The analysis of covariance for the Stanford Binet and the DARCEE Concept Test, using the pretests as covariates, showed the experimental group to be slightly higher on all of the measures except for the Matching subtest. The MTSI data indicated that the treatment mothers gave significantly more Color and Shape Cue Labels, and significantly fewer Inappropriate Directions. The treatment mothers were higher on most appropriate, positive and cue label categories, but not to a statistically significant extent. Correlations of race, sex and summary MTSI variables showed that sex was related to Negative MTSI variables, thus indicating that mothers of females were more negative, and that race was related to Negative MTSI variables, thus indicating that mothers of Black children were more negative in their MTSI responses.

In 1973, Sandler et al. furthered the development of the original MTSI form. The MTSI was in the same form (contained the same materials) as was used by Sandler et al. (1971) and described in Appendix A. The new study was primarily for the purpose of validating the MTSI and investigating the dimensions of race and IQ of the child. The results concerning some of the general characteristics of maternal teaching style showed that the majority of mothers used directions containing Cue Labels and accompanied by gestures as the mainstay of their teaching style, and that they did

not emphasize either positive or negative feedback. Along the IQ dimension, the authors found that mothers of high IQ children tended to give more information, used more Cue Labels and used more Cue Labels in combination, gave more positive feedback and less negative feedback, and used more gestures and fewer physical contacts than mothers of low IQ children. Along the race dimension, the authors found that Black mothers used fewer Cue Labels for Position, Color and Shape, were more critical of their children in both the categories of child-related and task-related negative feedback, and gave more inappropriate information and asked more inappropriate questions than the White mothers.

Method

Subjects

Portions of both the 1971 revision and 1973 alternative forms of the MTSI were administered to 17 mother-child pairs (6 Male and 11 Female; 12 Black and 5 White). The mean ages of the mothers and children were 29.9 years and 48 months, respectively.

The subjects were first approached by either a personal visit or by telephone, and asked if they would volunteer to come to George Peabody College for Teachers to participate in a study dealing with mother-child relations. They were told that their participation would be approximately one hour. They were also told that transportation would be provided and

that their children would receive a set of five children's books for participating in the study. If they agreed, a time was scheduled for the mother-child pair.

The names of the families contacted were obtained from lists of former participants in other DARCEE programs, current participants in the Dudley Park and Chestnut Street Head Start Centers, and current participants in the Donna Belmont Day Care Center, all of Nashville, Tennessee. Approximately 70 mothers were originally contacted. Of those contacted, 28 mothers (40%) agreed to participate. From these 28 mothers, 17 mother-child pairs (61% of those agreeing to participate and 24% of the total number contacted) actually participated in the study.

Procedure

The primary purpose of this study is the establishment of the alternative form of the MTSI. In order to achieve as many task comparisons as possible and yet not tire the subjects, each mother-child pair was administered one trial task, three tasks from either the 1971 revision or the alternative form, and then the corresponding three tasks from the left-over form. The tasks presented and the order of presentation of the forms (1971 revision form first or alternative form first) to each mother-child pair were randomly selected (drawing lots from a hat). Although the tasks presented and the order of form presentation were randomly selected, the

sequence of the tasks within each form was kept constant, e.g., if task 1 was used it would always come first, task 2 always would come before tasks 3 or 4, etc., regardless of form. This design resulted in 12 comparisons on task 1, 12 comparisons on task 2, 15 comparisons on task 3, and 12 comparisons on task 4.

The tasks from the two forms of the MTSI were administered by a white female examiner to the mother-child pairs according to the instructions discussed in Sandler et al. (1971). Responses from all task cards were recorded by the examiner on the scoring grid described in Sandler et al. (1971). Reliability estimates for the scoring technique established in previous studies ranged from 0.77 to 0.99 (Sandler et al., 1971).

The data will primarily be analyzed in terms of comparisons between response totals for each of the 16 categories on both forms of the MTSI in order to establish the validity of the alternative form. The t statistic will be used in this analysis. The data will also be analyzed along the dimensions of race (Black/White), sex of the child, and age of the mother by the use of correlational techniques.

Results

The results will be discussed in two sections: (1) the validation of the alternative forms of the MTSI; and (2) the demographic variables.

The frequencies and percentages of responses on the two forms of the MTSI are reported in Table 1. There were a total of 914 responses coded on the presently used (1971 revision) MTSI form, yielding a mean of 53.8 responses per subject, and a total of 941 responses coded on the alternative form, yielding a mean of 55.4 responses per subject. The majority of the responses on both forms fell under one of two rubrics: Appropriate Direction, and Cue Labels (Color, Shape, Size, and Position). There were 264 Appropriate Directions, accounting for 28.88% of the total, on the presently used MTSI, and 287 Appropriate Directions, accounting for 30.49% of the total, on the alternative form. Also in comparison, there were 336 Cue Labels, accounting for 36.74% of the total, on the presently used form, and 318 Cue Labels, accounting for 33.78% of the total, on the alternative form. Within the Cue Label rubric on the 1971 form, Color (74 responses and 8.09% of the total), Shape (56 responses and 6.12% of the total), and Position (200 responses and 21.88% of the total) accounted for most of the responses with Size (6 responses and .65% of the total) being coded very infrequently. These results are similar to those found with the Cue Label rubric on the alternative form. Again, Color (65 responses and 6.90% of the total), Shape (55 responses and 5.84% of the total), and Position (193 responses and 20.51% of the total) accounted for most of the responses with Size (5 responses and .53% of the total) being coded infrequently.

Table 1

Comparison of the Frequencies and Percentages of Responses on the Two Forms of the MTSI

	Category	1971 MTSI		Alternate MTSI	
		Frequency	Percentage of the Total	Frequency	Percentage of the Total
1.	Appro. Direction	264	28.88	287	30.49
2.	Inappro. Direction	0	0.00	0	0.00
3.	Appro. Questioning	45	4.92	40	4.25
4.	Inappro. Questioning	0	0.00	0	0.00
5.	Appro. Information	32	3.50	47	4.99
6.	Inappro. Information	0	0.00	0	0.00
7.	Child-Oriented Pos.	1	0.10	0	0.00
8.	Child-Oriented Neg.	0	0.00	0	0.00
9.	Task-Oriented Pos.	49	5.36	56	5.95
10.	Task-Oriented Neg.	22	2.40	17	1.80
11.	Gesture	59	6.45	50	5.31
12.	Physical	106	11.59	126	13.39
13.	Color	74	8.09	65	6.90
14.	Shape	56	6.12	55	5.84
15.	Size	6	0.65	5	0.53
16.	Position	200	21.88	193	20.51
	Total	914	99.94	941	99.96

There were no Inappropriate Directions, Questioning, or Information coded on the 1971 form, and relatively no Positive (1 response) or Negative (0 responses) Child-Oriented responses coded. Similarly, there were no Inappropriate Directions, Questioning, or Information, and no Positive or Negative Child-Oriented responses coded on the alternative form. Also of interest is the fact that there were approximately twice as many Physical responses as Gestures on both forms (106 and 59 responses respectively for the 1971 form, and 126 and 50 respectively for the alternative form). There were also many more Task-Oriented Positive responses as compared to Task-Oriented Negative responses on each form (49 and 22 responses respectively for the 1971 form, and 56 and 17 responses respectively for the alternative form).

The comparisons of the response totals for each category between the two forms of the MTSI are presented in Table 2. Comparisons were not made on some categories because of the infrequency of their occurrence. The analysis of the data with the t statistic revealed that the total number of responses on each category, when compared between forms of the MTSI, were not statistically significantly different.

In the analysis of the demographic variables, the two forms of the MTSI were combined thus yielding single scores for each of the 16 categories of the MTSI. There were 3 demographic variables investigated: sex of child, race

Table 2

Comparison of Response Totals for Each Category of the Two MTSI Forms

Category	1971 MTSI $\bar{X}$	1971 MTSI sd	Alt. MTSI $\bar{X}$	Alt. MTSI sd	t
1. Appro. Direction	15.53	7.48	16.88	6.51	.22
2. Inappro. Direction	0.00	-	0.00	-	-
3. Appro. Questioning	2.65	4.01	2.35	3.53	.19
4. Inappro. Questioning	0.00	-	0.00	-	-
5. Appro. Information	1.88	1.75	2.76	2.34	.79
6. Inappro. Information	0.00	-	0.00	-	-
7. Child-Oriented Pos.	0.06	-	0.00	-	-
8. Child-Oriented Neg.	0.00	-	0.00	-	-
9. Task-Oriented Pos.	2.88	1.94	3.29	1.77	.32
10. Task-Oriented Neg.	1.29	1.87	1.00	1.03	.43
11. Gesture	3.47	3.99	2.94	3.10	.31
12. Physical	6.24	4.54	7.41	5.07	.40
13. Color	4.35	3.71	3.82	2.85	.28
14. Shape	3.29	3.01	3.24	3.39	.03
15. Size	0.35	-	0.29	-	-
16. Position	11.76	6.31	11.35	5.63	.09

(Black/White), and age of mother. The results of the correlation between the 19 variables (3 demographic and 16 MTSI categories) are presented in Table 3. Of the demographic variables, only age of mother correlated with Appropriate Direction ($r = -.55$, $p < .05$) and with Appropriate Questioning ($r = .58$, $p < .05$).

Among the MTSI categories themselves, Appropriate Direction correlated significantly with Appropriate Questioning ($r = -.54$, $p < .05$), Gesture ($r = .55$, $p < .05$), Color ($r = .55$, $p < .05$), Shape ($r = .54$, $p < .05$), and Position ($r = .83$, $p < .05$). Appropriate Questioning was also significantly correlated with Appropriate Information ($r = .50$, $p < .05$) and Position ($r = -.52$, $p < .05$). The Task-Oriented Positive category was correlated significantly with Color ($r = .62$, $p < .05$) and Position ($r = .52$, $p < .05$). The Gesture category correlated significantly with the Physical category ($r = -.53$, $p < .05$) and with Position ($r = .57$, $p < .05$). The Physical category in turn correlated negatively with the Position category ($r = -.53$, $p < .05$). Finally, three of the four Cue Label categories were significantly correlated: Color with Position ($r = .55$, $p < .05$), and Shape ($r = .58$, $p < .05$).

Table 3

Correlations of Demographic and MTSI Variables

Variable	Variable																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1.	1.00	.21	.02	.06	-	.10	-	.25	-	-	-	.05	.16	.23	.28	.28	.13	.39	.08
2.		1.00	.25	.11	-	.01	-	.18	-	-	-	.05	.13	.23	.36	.10	.26	.13	.09
3.			1.00	-.55*	-	.58*	-	.12	-	-	-	-.28	-.14	-.25	.04	-.18	-.03	-.19	-.45
4.				1.00	-	-.54*	-	-.29	-	-	-	.29	.01	.55*	-.47	.55*	.54*	.24	.83*
5.					1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.						1.00	-	.50*	-	-	-	-.12	-.13	-.37	-.10	-.34	-.03	-.13	-.52*
7.							1.00	-	-	-	-	-	-	-	-	-	-	-	-
8.								1.00	-	-	-	.30	.03	-.14	.20	-.06	.31	.34	-.05
9.									1.00	-	-	-	-	-	-	-	-	-	-
10.										1.00	-	-	-	-	-	-	-	-	-
11.											1.00	-	-	-	-	-	-	-	-
12.												1.00	.06	.44	-.34	.62*	.33	.21	.52*
13.													1.00	-.03	-.19	-.27	-.20	.21	.15
14.														1.00	-.53*	.40	.22	.10	.57*
15.															1.00	-.42	-.03	.00	-.53*
16.																1.00	.35	.17	.55*
17.																	1.00	.33	.58*
18.																		1.00	.31
19.																			1.00

*Significant at $p < .05$.

\- Insufficient frequency of occurrence.

Variables:

1. Sex of Child
2. Race
3. Age of Mother
4. Appropriate Direction
5. Inappropriate Direction
6. Appropriate Questioning
7. Inappropriate Questioning
8. Appropriate Information
9. Inappropriate Information
10. Child-oriented Positive
11. Child-oriented Negative
12. Task-oriented Positive
13. Task-oriented Negative
14. Gesture
15. Physical
16. Color
17. Shape
18. Size
19. Position

20

Discussion

The discussion section will also stem around two major areas. First, the data dealing with the validation of the alternative form of the MTSI will be discussed. Next, some of the general characteristics of maternal teaching behavior will be discussed for all Ss and both MTSI forms combined.

In order to demonstrate the validity of the altnerative forms of the MTSI, an analysis was made of the response totals for the respective categories on the two forms. The non-significant t values tend to indicate that both forms were tapping the same sources of maternal teaching behavior. Also, by comparing the total number of responses and the frequency and percentages of responses for each category on both MTSI forms, it becomes apparent that both forms elicited very similar responses from the mothers. Therefore, it is the author's opinion that the present study promotes the validity of the alternative form of the MTSI, thus establishing it as useful for a future research tool in the area of maternal teaching styles. The validation of the new form allows researchers the use of two MTSI forms in the future evaluations of programs dealing with educational change agents which can be used either in the laboratory setting or out in the field.

Turning to the more general characteristics of maternal teaching behavior as evidenced on the combined forms of the MTSI, it should be noted that the mothers used a majority of

Appropriate Direction and Cue Label responses in their teaching styles. These findings are in full agreement with the findings of Sandler et al. (1973). However, unlike Sandler et al., the present study showed a greater frequency of occurrence for physical contact rather than gestures. The author feels that this is primarily due to the limitation of the present subject population to lower socio-economic mothers. The results on physical contact are in line with Schmidt and Hore's (1970) findings in which lower socio-economic mothers were found to exhibit more physical contact and fewer gesture responses. The present study's findings would then tend to support, in some way, Schmidt and Hore's suggestion that an environment may be impoverished nonverbally as well as verbally. Also unlike Sandler et al., the present study found Task-Oriented Positive responses to be used much more frequently than Task-Oriented Negative responses. It is also interesting to note that this task-oriented feedback was the only type of feedback used by the mothers in the present study. Also of interest in the present study is the absence of Inappropriate responses (Direction, Questioning, and Information) and Positive or Negative Child-Oriented responses. This has not been true of previous MTSI research and may present a future problem area. It is the author's belief that much of this absence may be due to the examiner's failure to identify and record these responses, especially in the case

of the inappropriate responses. Concerning the Child-Oriented responses, Sandler et al. (1973) found a similar minimal occurrence of these responses in their research (.1% of the total number of responses for the Positive, and .5% of the total number of responses for the Negative). Finally, the present study, as did Sandler et al., found a predominance of position responses within the Cue Label rubric. In general, it would seem, from analyzing the frequency of occurrence for each category, that the lower socio-economic mothers in the present study were using appropriate directions, cue labels (especially position responses), and physical contact as mainstays of their teaching styles.

Concerning the demographic variables, it was found that sex of child and race had no significant correlations with any of the MTSI categories. This finding seems to be somewhat at odds with some of the previous research (e.g., Sandler et al., 1973) which found racial differences on several of the MTSI categories. However, the present findings would support the idea of the MTSI as a test differentiating only in teaching style behavior and not along race or sex boundaries. The age of mother variable correlated significantly negatively with appropriate directions and significantly positively with appropriate questioning. This would indicate a trend that as the mother gets older, certain factors influence her teaching style causing a change from the use of more directions to the

use of more questioning. Because of the lack of previous research along this line, this finding may be considered hypothesis generating for future research.

The correlations within the MTSI categories themselves led to four basic trends or findings. First, the color and shape responses correlated significantly with the position responses. This would indicate that most position statements are accompanied by either color or shape statements. For example, a mother may tell her child to "Put the circle in the corner" or "Put the red one in the corner." Second, task-oriented feedback was the predominant form of feedback used by the mothers with positive feedback being used more frequently. The task-oriented positive feedback was significantly correlated with both color and position responses indicating the use of this type of feedback in connection with those two types of information. For example, a mother may tell her child to "Put the red one in the corner" and then give the child feedback like "You did that very well." Third, there was a significant negative correlation between physical responses and gestures. Physical responses also correlated negatively with position, while gestures correlated positively. This leds to a trend of either using physical contact as a mode of teaching styles or using gestures in relation to positional cues as a mode of teaching style. Finally, the mothers tended to either use appropriate

direction or appropriate questioning in their teaching behaviors. As the frequency of one of these responses increased, the frequency of the other decreased. Highly correlated with the use of appropriate direction was the use of most cue labels (all but Size) and gestures. On the other hand, the use of appropriate information was highly correlated with appropriate questioning.

Thus, in general, two basic teaching styles emerged: one using appropriate questioning and information as the mainstays of teaching behavior, and the other using appropriate directions, cue labels (except Size), and gestures as its mainstays. Also judging from the negative correlation of physical responses and gestures and the almost significant negative correlation of physical responses with appropriate directions, it would seem that this type of response occurred more frequently in connection with the first style. The use of feedback in the form of task-oriented statements apparently was used somewhat in both styles. Inferring from the frequency of responses in each category, it seems that the use of directions, cue labels, and gestures was the more prominent maternal teaching style in the present study. This finding is in agreement with the finding of Sandler et al. (1973) that mothers predominantly use directions containing cue labels and accompanied by gestures as the mainstays of their teaching style. Also, considering the cue labels as a

form of information, the predominance of this teaching style in the present study would be in agreement with Hess et al. (1968) findings that mothers effective in teaching their children certain tasks used directions and information as their primary tools.

In conclusion, the author feels that the validity of the alternative form of the MTSI has been demonstrated. Also, a certain amount of reliability for the MTSI has been demonstrated due to the similar findings of this study in comparison with previous research on the MTSI. Finally, it seems apparent that many demographic variables may have influencing effects on maternal teaching styles and further research in this area is warranted.

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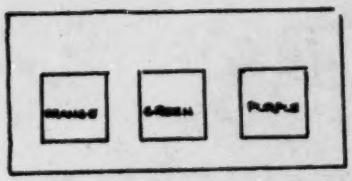
APPENDIXES

APPENDIX A

MATERNAL TEACHING STYLE INSTRUMENT

1971 FORM MATERIALS

1971 Form



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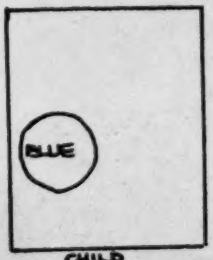

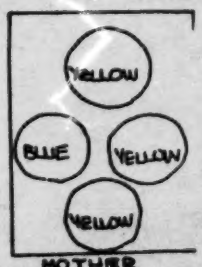

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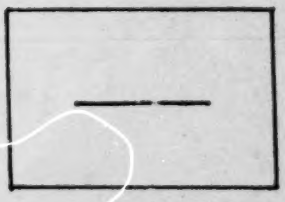

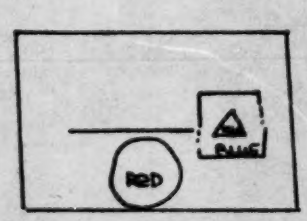

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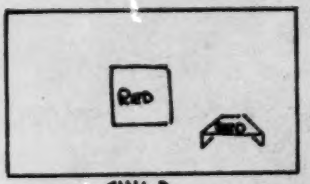

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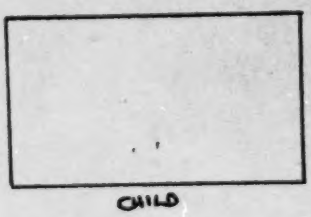
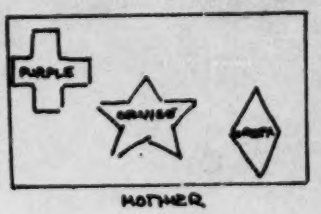


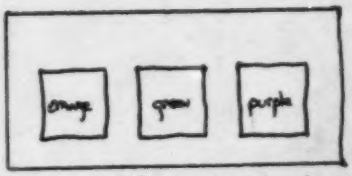


APPENDIX B

MATERNAL TEACHING STYLE INSTRUMENT

ALTERNATIVE FORM MATERIALS

Alternative Form



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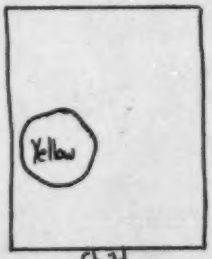

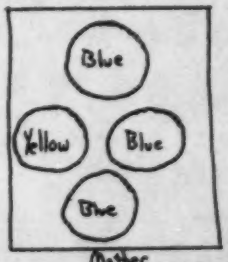

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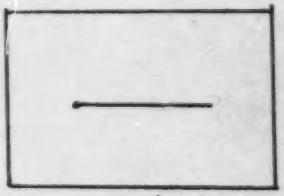

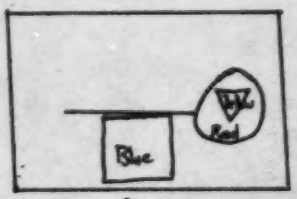

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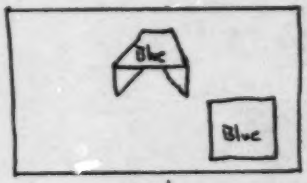

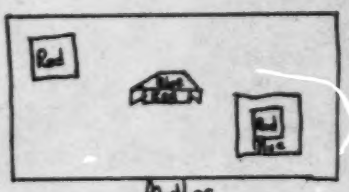

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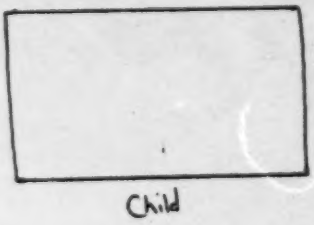
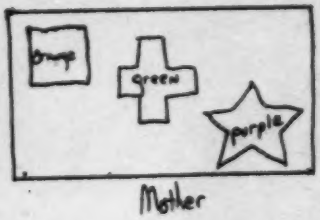




APPENDIX C

DIRECTIONS FOR ADMINISTRATION AND CODING FOR THE MATERNAL TEACHING STYLE INSTRUMENT

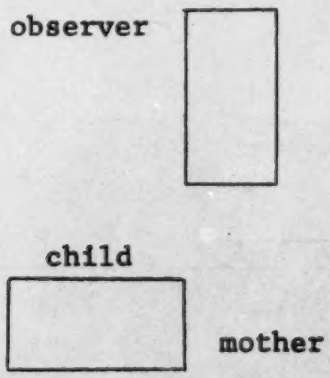
DIRECTIONS FOR ADMINISTRATION AND CODING FOR THE MATERNAL TEACHING STYLE INSTRUMENT

Directions for Administration

1. Procedure

a) Arrange all cards and corresponding figures on table at Observer's left.

b) Seat mother and child at other table (child should sit adjacent to mother on her right if she is right-handed, on her left if she is left-handed).



c) Hand trial card to mother, and say:

> (mother's name), you and (child's name) will do this together. You are to help (child's name) fix his card so that it will match your card.
>
> You may help him in any way to fix his card to look like yours so long as you do not show him your card. Make sure he does not see your card.

d) Place trial card on the table in front of the child, and place the corresponding figures in a random order next to the top of the card, saying to the child:

> (child's name), this is your card. Here are your blocks. You may begin as soon as mother tells you to do so.

e) The observer should not attempt to modify the mother's task style, unless the mother clearly does not understand the task. For example, a mother may do the task herself by placing the figures on the card. This technique may be an important part of her teaching style. In this case, the instructions should be repeated only at the beginning of each card.

A mother may ask the observer a question about the task. For example: "Am I supposed to do it, or is my child?" In this case, the observer should modify the relevant instruction by changing the wording and say something like: "You may help (child's name) any way you want to get his card to look like yours."

f) There is no time limit on the task, and the observer should approach and take away the materials only after the mother indicates that she is finished.

g) Repeat this procedure for each of the remaining cards.

2. Coding

a) Coding is done on the MTSI scoring grid (see next page).

b) For each observer behavior, the sequential number of that behavior is placed in the appropriate box of the scoring grid.

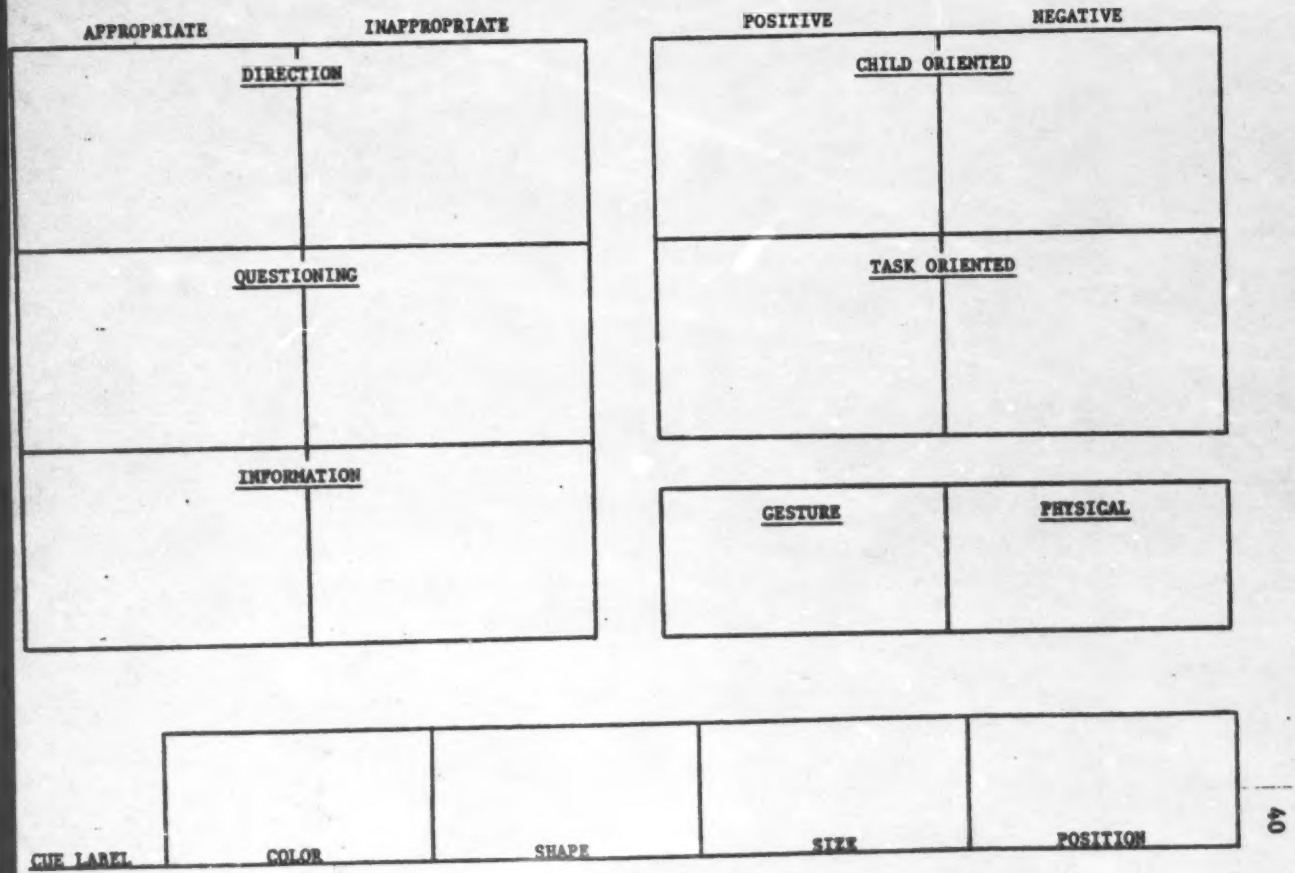
For example, if the mother begins with an appropriate question, then an appropriate information statement, and then an appropriate direction, the coder would place a 1 in the appropriate question box, a 2 in the appropriate information box, and a 3 in the appropriate direction box.

This numbering in sequence of behaviors is continued until the mother finishes the task.

c) Should the coder lose count during coding, it is easy to continue coding. If, for example, the coder loses count somewhere in the forties, he may continue to code by using numbers above 50 or 60. In this way, there will be a discontinuity in the numbers on the scoring grid, but the sequential information will be preserved.

APPENDIX D

MATERNAL TEACHING STYLE INSTRUMENT SCORING GRID


APPROPRIATE
INAPPROPRIATE
DIRECTION
QUESTIONING
INFORMATION
POSITIVE
NEGATIVE
CHILD ORIENTED
TASK ORIENTED
GESTURE
PHYSICAL
CUE LABEL
COLOR
SHAPE
SIZE
POSITION
40

APPENDIX E

MATERNAL TEACHING STYLE INSTRUMENT

CATEGORY DESCRIPTIONS

MATERNAL TEACHING STYLE INSTRUMENT
CATEGORY DESCRIPTIONS

I. Verbal Responses

a) Direction will be scored whenever the mother verbally instructs the child to do something with the test materials with an imperative statement. A Direction is composed of two elements: 1) an instruction to pick up a figure ("Pick up the blue square") and 2) an instruction to place the figure on the card ("Put it in the right-hand corner"). One Direction will be counted when either one or both of these elements are given by the mother. If a mother repeats an element, however ("Pick it up," "Pick it up"), she is given a score for each repetition. The unit for a Direction is a sentence.

1). Appropriate Direction will be scored when a direction is specific and task-directed. This direction must be suitable to the completion of the task, and must sound to the coder that it contains enough information and is reasonable enough for the child to follow it. For example, "Push the triangle to the top" would be an Appropriate Direction, while "Do it right," or "Make it pretty" would not.

2). Inappropriate Direction will be scored when an unreasonable demand is made upon the child; when it is impossible for him to follow a direction because of its lack of specificity or information. "Do it right," "Make it pretty," and "Push it around" are examples.

b) Questioning will be counted whenever the mother asks a question of the child. The unit is a sentence.

1). Appropriate Questions are those which focus the child's attention on information which is necessary for the successful completion of the task. These questions must be directed toward information which it is possible for the child to know. Examples are "Do you know what color that is?", and "Which one is the star?"

2). Inappropriate Questions are those which call upon the child to draw upon information which he cannot reasonably be expected to have, or those which are irrelevant to the successful completion of the task. Inappropriate

Questions are of this type: "Is it right?" and "Do you like ice cream?".

c) Information will be counted whenever a declarative sentence is used by the mother to enrich or add to the test experience of the child. Information usually deals with specific attributes of the task materials along the dimensions of color, size, shape, position, sameness-difference, etc. The unit is a sentence.

1). Appropriate Information is related to the task and gives him inputs which should help him to follow directions leading to the successful completion of the task, but it should not be related to the child's actual test performance. "This is a triangle," or "Purple is the color of grapes" would be appropriate information responses.

2). Inappropriate Information is either incorrect or is unrelated to the task or materials, such as "This is taking a long time."

d) Child-Oriented Feedback will be scored whenever the mother responds verbally about the child but not about his performance on the task.

1). Positive Child-Oriented Feedback will be scored whenever the mother responds with positive affect to the child about the child, whether or not this response is a result of his task performance. For example, "You're a good boy" would be a Child-Oriented Positive response. The unit is a sentence.

2). Negative Child-Oriented Feedback is scored when the mother responds with negative affect to the child about the child, as in "You're a bad boy."

e) Task-Oriented Feedback is scored when the mother responds verbally to the child about his performance on the task, not when she makes global affective statements about the child. The unit is a sentence.

1). Positive Task-Oriented Feedback is counted when the mother responds verbally to the child about his task performance with positive affect ("You did that very well")

2). Negative Task-Oriented Feedback is counted when the

mother responds verbally to the child about his task performance with negative affect ("No, you're doing that wrong").

f) Gesture is coded whenever the mother uses a bodily movement without actually touching the child or the task materials. These movements may impart information to the child, or to respond favorably or unfavorably to the child or his performance. The unit is a completed action: from a state of rest to a gesture to a return to a state of rest. One Gesture would be a shaking of the head or pointing to a block.

g) Physical is coded whenever the mother actually touches the child or the task materials. This may be in a variety of contexts, such as moving the blocks while modeling for the child, behavior management of the child, or expressing positive or negative affect to the child. The unit is one touch: Touching three different blocks or one block three times would be scored as three Physical units.

h) Cue Label is coded whenever the mother accurately uses a word or phrase to describe the figures or the card to the child. The unit is a word for Color, Shape, and Size, and the unit for position is a word or a phrase.

1). Color is coded each time the mother accurately uses a color name. "Pick up the bug blue triangle" would initiate one unit score in the Color box of the scoring grid.

2). Shape is coded each time the mother accurately uses a shape name. "Pick up the big blue triangle" would initiate one unit score in the Shape box of the scoring grid.

3). Size is coded each time the mother accurately uses a size name. "Pick up the big blue triangle" would initiate one unit score in the Size box of the scoring grid.

4). Position is coded each time the mother specifically and accurately identifies an area of the card, either with herself, the child, or the figures as referents. Put the triangle in the corner, near the blue square would initiate TWO unit scores in the Position box of the scoring grid. The unit for Position is a word or a phrase.